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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,986	11/03/2003	Toshikazu Onishi	YAO-4323US1	5287
23122	7590	09/13/2005	EXAMINER	
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			MENEFFEE, JAMES A	
			ART UNIT	PAPER NUMBER
			2828	
DATE MAILED: 09/13/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/699,986

Applicant(s)

ONISHI ET AL.

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 7-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/565,937.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/3/2003
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

By preliminary amendment filed 11/3/2003, claims 1-6 are cancelled and the specification amended to reference the parent. Claims 7-13 are pending.

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/565,937, filed on 5/5/2000.

### ***Specification***

The abstract of the disclosure is objected to because it is over 150 words. Correction is required. See MPEP § 608.01(b).

### ***Drawings***

Figures 6A-6D should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono (US 5,737,351). See Figs. 1-2 and discussion thereof; see also Fig 3 for the fabrication steps of the device.

Regarding claim 7, Ono discloses a method for producing a semiconductor laser comprising forming a semiconductor multilayer structure on a semiconductor substrate 1 of a first type, the multilayer structure including a cladding layer 2 of a first type, an active layer 3 having a superlattice structure, a first upper cladding 4 of a second type, an etch stop layer 5 of the second type, a second cladding layer 7 of the second type, a band discontinuity reduction layer 8 (layer 8 is located in the same location and made of the same material as applicant's "band graded" layer, and therefore may be interpreted to be the same as that layer) of the second type, and an impurity supply control layer 11. While layer 11 is called a "cap layer" by Ono, the diffusion occurs at areas where the layer is removed and therefore it may be interpreted as controlling the impurity supply.

The active layer 3 is disordered by diffusing an impurity at least in predetermined region 10. The second cladding is formed into a ridge 16 by wet etching. Col. 7 lines 34-39.

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The etch stop layer 5 is also impurity diffused in the predetermined region 10. The concentration of the diffusion is  $1 \times 10^{18}$  to  $1 \times 10^{19} \text{ cm}^{-3}$ . This range overlaps with the claimed range of less than about  $2 \times 10^{18} \text{ cm}^{-3}$ . When the claimed and prior art ranges overlap a prima facie case of obviousness exists. See MPEP 2144.05 and cases cited therein. And of course, the impurity concentration in the predetermined region 10, where the impurity is actually diffused, is necessarily higher than the other areas where the impurity is not diffused.

Regarding claims 8-9, the substrate 1 comprises GaAs of a first type, the cladding 2 of the first type comprises AlGaInP, the active layer 3 comprises a superlattice of AlGaInP and GaInP, the first and second claddings 4,6 of the second type comprise AlGaInP, the etch stop layer 5 comprises GaInP of the second type, the band graded layer 8 comprises GaInP of the second type, and the impurity supply control layer 11 comprises GaAs. See col. 6 lines 4-22 and col. 9 lines 25-34. These limitations meet claim 9 and broader claim 8.

Regarding claim 10, the impurity supply control layer 11 has a thickness of 100-1000 angstroms. Col. 6 line 21.

Regarding claim 11, the claimed limitations regarding concentration gradients are not disclosed. However, this feature is deemed to be inherent. "Once a reference teaching [a] product appearing to be substantially identical [to that claimed] is made the basis of a rejection, and the examiner presents evidence or reasoning tending to show inherency, the burden shifts to applicant to show an unobvious difference." MPEP 2112 V. "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency under 35 U.S.C. 102, on prima facie obviousness under 35 U.S.C. 103, jointly or alternatively, the burden of proof is

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the same.” *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980). Here, the layer structure, including the materials used, is identical in each of the claimed and prior art devices. Additionally, a prima facie case has been made as to the impurity concentration. Since the claimed structure is identical to the prior art structure then it is believed that the properties are inherent. See MPEP 2112.01 I. This finding is rebuttable by the applicant. While the present claims are method claims and not strictly “products,” the product formed by the methods is what the examiner is considering.

Regarding claim 12, as noted above the impurity diffusion region is 10, and this region also includes impurities diffused in the active layer. As noted above with regard to claim 7, a prima facie case is made as to the concentration range.

Regarding claim 13, the impurity is Zn. Col. 7 line 2.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the PAIR system. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.



James Menefee  
September 7, 2005